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Prospects of Japanese Computer Gains

(Cont)

Japan's Computer Plans Worry U.S. Experts

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TOKYO, Sept. 4 — At every turn here, one confronts overwhelming evidence that Japan, more than any other nation, has embraced advanced electronic and computer technology as a way to improve industrial productivity, save energy and, in theory, make day-to-day life more convenient, enriching and entertaining.

The influence of such technology is apparent in hundreds of small ways. In the Asahi Shimbun building, home of the leading Japanese newspaper,

venetian blinds rise and fall at the whim of an energy-conscious computer. In the Hotel Okura, a visitor does not have to request a wake-up call because a soft beep can be ordered for any time by punching a few buttons on an electronic bedside console.

"I've lived here for four years, so I should be inured to it, but I'm still struck every time I walk through Akihabara," said Eric W. Hayden, chief economist for the Bank of America's Asia division. He was referring to the bustling district of semiconductor shops that form a veritable electronics

flea market. "This is where these people really excel — in electronics," he added.

To expand its success in electronics, Japan hopes to do what it has not yet done: come up with new basic technology on its own, rather than just embellish the computer technology developed by other nations, the United States in particular.

The market-oriented Japanese approach to electronic research has led Japan's trading partners to accuse it of being a free rider in the technological area. Japan now seems committed to changing this image. The Ministry

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of International Trade and Industry announced in recent months that it would spend more than \$300 million over the next decade on these major research projects:

① Development of a supercomputer that would be more than 60 times faster than the best now available.

② Basic work on a "fifth-generation" computer that could follow oral commands as well as solve problems nobody told it to tackle — a capacity known as "artificial intelligence."

③ Development of new, sophisticated semiconductor devices.

The prospect of Japan's forging ahead in computer manufacturing, a sector where the United States still claims supremacy, is worrying American executives and Government officials. They see the possibility of a challenge to the industry's giant, the International Business Machines Corporation.

"There is a feeling that, in 10 years or so, the best computers in the world may well be made by Fujitsu and Hitachi," Franklin J. Vargo, Deputy Assistant Secretary of Commerce, said during a recent interview in his Washington office. "If that happens, it will give Japan enormous leverage in the United States in terms of foreign and defense policy because we, as a society, are so dependent on computers, and that dependency will only increase."

Japan's reliance on electronics and computers is easy to see in its factories, where impressive gains in productivity have been achieved, mainly because of the nation's ability to introduce electronic techniques in industries that were once mechanical. This has reduced labor costs and has increased efficiency.

'Robots Making Robots'

Perhaps the most striking example of this trend is the handful of so-called manless factories that are springing up in Japan. In Nagoya, for instance, the Yamazaki Machinery Works has opened a plant in which computer-controlled machine tools produce more machine tools exactly like themselves. Some people describe the process as "robots making robots."

The plant, which will begin full operation in October, already runs 24 hours a day, with five workers in each of the first two shifts and no workers in the third shift. The main task of the human laborers is to check for wear on the 18 machines. Company officials told a delegation of Americans — members of Congress, business executives and academic leaders — who visited the plant last week that a conven-

tional factory would need 70 machines and a work force of 200 to match the production of this automated setup.

The evidence of observation and the success of Japanese electronic products in international markets suggest that Japan is a leader in making the transition toward an electronic-based, fully computerized society — what some people call the "second industrial revolution."

Jean-Jacques Servan-Schreiber, the French writer, asserts in his new book, "The World Challenge," that "Japan stands as a model to the world."

An ambitious vision of Japan's future is offered in a report issued in June by an advisory group to the Ministry of International Trade and Industry. This study, which has not yet been published in English, predicts that the pace of computerization will continue without letup, changing industrial practices and people's everyday routines more than ever. The report represents a consensus of views of top business and governmental officials.

Felt Virtually Everywhere

A hint of things to come can also be seen on the office wall of the trade ministry's electronics policy division. Smiling cartoon characters in a black-and-white mural inhabit a community where the computer's presence is felt virtually everywhere — in homes, offices and other places.

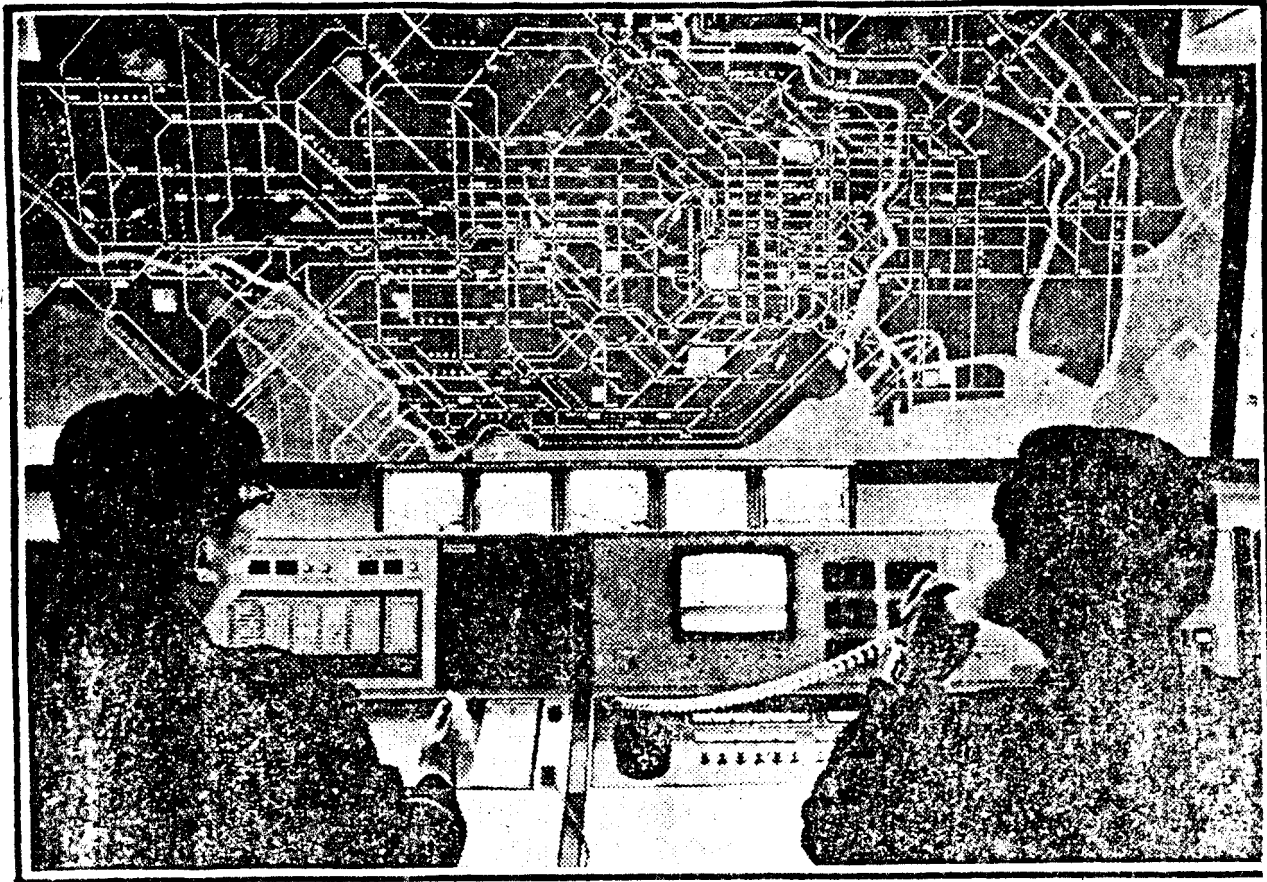
In the mural, physicians in hospitals have only to push a button to flash a patient's entire medical history onto a video screen. Computer-controlled vehicles have replaced buses and taxis. Seagoing robots roam the ocean, gauging underwater currents and spotting schools of fish.

Gesturing toward the mural, Kiyoshi Hosomizo, a department chief in the electronics policy division, says that "these are examples of the future computer-oriented society."

Although such a future is years away, the plan has moved beyond the drawing board. For example, 160 families near Osaka are already linked together by a network of computer terminals, cameras and microphones in a Government-sponsored experiment. The system allows two-way communication and includes a wide variety of entertainment and educational offerings, such as English lessons for individuals.

"The experiment is going very well," said Haruo Katsuyama, the trade ministry official overseeing the project. "The people like it because of all the information they can get."

According to a booklet describing the experiment, the data in greatest demand are these: men want golfing lessons, women want cooking tips and



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Traffic control center in the Tokyo police department headquarters, where traffic is monitored by computer.

children want cartoon fairy tales.

Japan has moved so rapidly to increase the use of electronics and computers in its economy because it is poor in natural resources. The country has to import nearly all of the oil it consumes, for example. Reacting to the two oil price shocks of the 1970's, Japan began to develop an industrial system that relies on its highly skilled, energetic work force rather than on scarce resources.

Beyond the pressure of necessity, however, Japan's impressive push into the electronic age also owes much to the business-oriented society that prevails in this nation of 118 million people. Structural differences in the Japanese system, many observers say, has given it a big edge over other countries.

In Japan, for example, much of the stock of big corporations is typically owned by banks and other financial institutions, far more so than in the United States. The banks are often major lenders to the same corporations whose stock they own.

Being beholden to knowledgeable owners and creditors, who are less concerned about quarterly profit gains

than long-range financial health, makes it easier for Japanese corporate executives to invest in computer-controlled production equipment even if short-term earnings suffer as a result.

In addition, antitrust laws in Japan are less stringent than in the United States, permitting a measure of consultation between companies and cooperative effort in some areas that would be illegal in America.

Lifetime Employment

Most large Japanese companies maintain a system of lifetime employment for their workers, and unions are delineated not by the workers' trade but by the company that employs them. All this helps explain why Japanese workers have been so receptive to the introduction of computers — they have no fear of losing their jobs. A machinist whose job has become obsolete, for instance, may become a specialist in programming the very robot that displaced him on the shop floor.

Consequently, there are more robots in Japanese factories than in all other countries combined, it is generally believed. The Japan Industrial Robot As-

sociation says about 70,000 robots are operating in Japan. Other estimates vary because there is no clear-cut definition of just what qualifies as a robot. Narrower definitions put the Japanese robot population at roughly 7,500.

The apparent ease with which Japan has moved toward a more efficient economy based on electronics is in marked contrast to the slower progress of other nations, including the United States. To some analysts, the Japanese success implies flaws in America's business and economic policies.

"We have an antiquated financial system, antiquated antitrust laws, an antiquated labor system and an antiquated management approach," Prof. William G. Ouchi of the University of California at Los Angeles said the other day during an interview in Tokyo. He recently began a three-year study, financed by several American companies, comparing the electronic industries of Japan and the United States.

"You don't find out your weakness until you have a competitor," Mr. Ouchi added. "And Japan is that competitor."